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BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
ADHAMI, MOHAMMAD SAJID	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/797,404	MATTA ET AL.	
	Examiner	Art Unit	
	MOHAMMAD S. ADHAMI	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44,57-59 and 62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44,57-59, and 62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's RCE filed 4/8/2009 is acknowledged.
- Claims 1,15,18,20-22,35-37,44,57,59, and 62 have been amended.
- Claims 45-56,60, and 61 are cancelled.
- Claims 1-44,57-59, and 62 are pending.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/8/2009 has been entered.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-44,57-59, and 62 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-19,22-34,37-43,57,58, and 62 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process"

under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The claimed method including steps of probing, generating, transmitting, and processing is broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Claims 20,21,35,36,44, and 59 are drawn to a signal; a "signal" is ineligible for patent protection because it does not fall within any of the four statutory classes of 35 USC 101 ("process, machine, manufacture or composition of matter"); it is not patentable subject matter. Reference The "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf) (see ANNEX IV, (c) Electro-Magnetic Signals on page 55).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-21,37-44,57-59, and 62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As amended, claims 1,20,21,37,44,57,59, and 62 recite *transmitting the pair of time-stamp request packets to two consecutive hops on the end-to-end path*. After carefully examining the instant disclosure, the examiner respectfully submits that support for this amendment is lacking and the addition of said limitation is new matter. The specification discloses transmitting a first packet to one hop and a second packet to another hop, but it does not disclose sending the first and second packet to two consecutive hops.

Claims 2-19,38-43, and 58 are rejected because they depend from a rejected claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-5,7-10,14-17,19-21,37-42,44,57,59, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (US App.2004/0146056) in view of Zhang (US App. 2003/0152034).

Re claims 1,20,21,37,44, and 62:

Martin discloses *a queue* **(**Para.[0023] The timer packet can then be queued for transmission**)**.

Martin further discloses *probing an end-to-end path to identify addresses of all hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables" where each network element can be a node**)**.

Martin further discloses *generating and transmitting a pair of time-stamp request packets to two consecutive hops on the end-to-end path* **(**Para.[0058] Upon receipt of a timer packet, the UTS time is immediately recorded - where the time packet is a "time-stamp request packet" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" – where the router can send multiple timer packets and where two hops neighboring hops are two consecutive hops**)**.

Martin further discloses *generating and transmitting a time-stamp in response to the pair of time-stamp request packets* **(**Para.[0058] Upon receipt of a timer packet, the UTS time is immediately record - where the UTS time is a "time-stamp" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" and Para.[0063] generates a data

request for the time of receipt of a packet and Para.[0067] “each router can initiate its own timer packets, call for timing data from any other router(s) and update the latency information in its router table independently of the network manager or any other router" - where the timing data contains a time stamp**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate of a link that couples the two consecutive hops on the end-to-end path* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

Martin does not explicitly disclose *generating a first time stamp at a first hop of the two consecutive hops and a second time stamp at a second hop of the two consecutive hops*.

Zhang discloses *generating a first time stamp at a first hop of the two consecutive hops and a second time stamp at a second hop of the two consecutive hops* **(**Para.[0089] The large packet in the first pair is set to expire at the link being measured (the kth router). The large packet in the second pair is set to expire at the next hop (the k+1)th router. The small packets in both pairs will be delivered to the destination and Fig.11 ref.242,244,246,248,256, and 258**)**.

Martin and Zhang are analogous because they both pertain to network communications.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include generating a first and second time stamp at first and second consecutive hops as taught by Zhang in order to accurately

measure the quality of service by taking the time differential measurement of two packets.

Re claim 2:

Martin discloses *a Traceroute application* **(**Para.[0049] the general route employed may be determined by existing routers**)**.

Re claim 3:

Martin discloses *the probing step to identify hops on the end-to-end path being generated from a source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claims 4 and 38:

Martin discloses *the processing of the time-stamp being performed at the source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claim 5:

Martin discloses *the time-stamp request packets being ICMP requests* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP"**)**.

Re claims 7-10:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *generating requests to hops based on their utilization, queuing delay, queue size, processing delay, available bandwidth, or congestion status*.

Zhang discloses *generating requests to hops based on pattern of utilization, queuing delay, queue size, processing delay, available bandwidth, or congestion status* **(**Fig.3 and 4 – Fig.3 shows compiling a list of peers to probe based on QoS parameters and other criteria and Fig.4 shows sending probes to peers included on the list, therefore the probes that satisfy the QoS and other criteria are probed more frequently than those not satisfying the criteria**)**.

Martin and Zhang are analogous because they both pertain to probing nodes to determine QoS parameters.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include generating probes based on QoS parameters as taught by Zhang in order to reduce probing traffic and reduce network traffic.

Re claims 14,16,17,39,41, and 42:

Martin discloses *the QoS estimating comprising a link and path capacity, a queuing delay, link and path utilization, and link and path available bandwidth* **(**Para.[0009] The capacity and transmission delay of a route will vary and Para.[0010] Link latency is used to compute variables such as maximum cell transfer delay, peak-to-peak cell delay variation, available cell rate, cell loss ratio, and the like where link and path capacity, utilization, and available bandwidth are all similar and can be found by the capacity and are reflected in the available cell rate**)**.

Re claims 15 and 40:

Martin discloses *the QoS estimate comprising queuing delay* **(**Para.[0011] "adaptive routing system in which the queue length at a router on a link is used as a proxy for the latency of that link and router tables are maintained using that data" where the queue length is related to the queuing delay**)**.

Re claim 19:

Martin discloses *restarting the probing step in the case of a change in routing tables* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables"**)**.

Re claims 57 and 59:

Martin discloses *probing an end-to-end path to identify capacity of all hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables" where each network element can be a node and Para.[0009] Since the capacity and transmission delay (latency) of a route will vary according to packet load and the capabilities of the links and routers in that route, router tables need constant updating**)**.

Martin further discloses *transmitting a pair of ping requests to a hop on the end-to-end path* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP (Internet Control Message Protocol) to send echo-reply control messages between network entities" where all nodes are capable of this function and Para.[0058]

Upon receipt of a timer packet, the UTS time is immediately recorded - where the time packet is a "ping request" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" – where the router can send multiple timer packets**)**.

Martin further discloses *receiving a ping reply in response to the pair of ping request* **(**Para.p0029 the sending switch uses its GPS clock to time-stamp selected outgoing packets and Para.[0061] When network manager or router wishes to collect latency data to up-date its router table, it can send a normal and separate management query packet to each of the routers requesting their respective receipt and transmission times for packets with IDs specified by the manager and Para.[0063] generates a data request for the time of receipt of a packet and Para.[0067] “each router can initiate its own timer packets, call for timing data from any other router(s) and update the latency information in its router table independently of the network manager or any other router" - where the timing data contains a time stamp**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

7. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang as applied to claim 1 above, and further in view of Carlson (US App.2004/0210632).

Re claims 6 and 11:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *the number of generated and processed time-stamp request packets being at least five and sending the requests after a certain delay*.

Carison discloses *the number of generated and processed time-stamp request packets being at least five and sending the requests after a certain delay* **(**Para.[0056] "ten pings are sent every sixty seconds, with each ping being separated by a one second interval"**)**.

Martin and Carison are analogous because they both pertain to identifying nodes on a path.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include generating at least five requests and transmitting them after a certain delay as taught by Carison in order to reduce congestion on the network and at the sender/receiver.

1. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang as applied to claims 1 and 5 above, and further in view of Arai (US 7,068,677).

Re claims 12 and 13:

As discussed above, Martin meets all the limitations of the parent claims.

Martin does not explicitly disclose *adding dummy data to a packet to increase the size of a packet in relation to the speed of a link*.

Arai discloses *adding dummy data to a packet to increase the size of a packet in relation to the speed of a link* **(**Col.5 lines 62-64 "the dummy bits I to be added are calculated to be a packet length such that the packet can be reached within the delay time" where if the link is fast, the delay time will be shorter**)**.

Martin and Arai are analogous because they both pertain to communication networks.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include adding dummy data to increase the size of a packet as taught by Arai in order to maintain a desired packet length.

2. Claims 18 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang as applied to claims 1 and 37 above, and further in view of Lucidarme (US App. 2003/0040320).

Re claims 18 and 43:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *estimating interfering flows*.

Lucidarme discloses *estimating interfering flows* **(**Para.[0069] "estimation by the receiver of the signal-to-interferer ratio (SIR)"**)**.

Martin and Lucidarme are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include estimating interfering flows as taught by

Lucidarme in order to choose a path that will offer the lowest interference and a better quality of service.

3. Claim 22-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang as applied to claim 1 above, and further in view of Patel (US App. 2003/0236827).

Re claims 22,35,36:

Martin discloses *a queue* **(**Para.[0023] The timer packet can then be queued for transmission**)**.

Martin further discloses *probing an end-to-end path to identify addresses of a plurality of hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables"**)**.

Martin further discloses *generating and transmitting a time-stamp request packet to a hop on the end-to-end path* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP (Internet Control Message Protocol) to send echo-reply control messages between network entities"**)**.

Martin further discloses *generating a time-stamp with the hop* **(**Para.p0029 the sending switch uses its GPS clock to time-stamp selected outgoing packets and Para.[0061] When network manager or router wishes to collect latency data to up-date its router table, it can send a normal and separate management query

packet to each of the routers requesting their respective receipt and transmission times for packets with IDs specified by the manager**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

Martin further discloses *sending an origination address* **(**Para.[0022] "The coding of a packet as a timer packet with the identifying transmitter and receiver addresses"**)**.

Martin does not explicitly disclose *spoofing the origination address to that of another hop on the network*.

Patel discloses *spoofing the origination address to that of another hop on the network* **(**Fig.3 ref.308 and Para.[0036] – where the spoofed address receives the replies**)**.

Martin and Patel are analogous because they both pertain to data communication.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include address spoofing as taught by Patel in order to avoid congestion by reducing the amount of replies received **(**Patel Para.[0036] In this way, one or more application running at the mobile node may be caused to cutback the rate of data or other information being transmitted by such applications to a level which is appropriate for the new link bandwidth**)**.

Re claim 23:

Martin discloses *a Traceroute application* **(**Para.[0049] the general route employed may be determined by existing routers**)**.

Re claims 24 and 25:

Martin discloses *the probing step to identify hops on the end-to-end path being generated from a source and/or destination node* **(**Fig.1 where the switches are “nodes” and can source and destination nodes**)**.

Re claims 26-28:

Martin discloses *the processing of the time-stamp being performed at the source and/or destination node* **(**Fig.1 where the switches are “nodes” and can source and destination nodes**)**.

Re claims 29,31,32, and 34:

Martin discloses *the QoS estimating comprising a link and path capacity, link and path utilization, link and path available bandwidth, and a propagation delay* **(**Para.[0009] The capacity and transmission delay of a route will vary and Para.[0010] Link latency is used to compute variables such as maximum cell transfer delay, peak-to-peak cell delay variation, available cell rate, cell loss ratio, and the like where link and path capacity, utilization, and available bandwidth are all similar and can be found by the capacity and are reflected in the available cell rate**)**.

Re claim 30:

Martin discloses *the QoS estimate comprising queuing delay* **(**Para.[0011] "adaptive routing system in which the queue length at a router on a link is used as a proxy for the latency of that link and router tables are maintained using that data" where the queue length is related to the queuing delay**)**.

4. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang and Patel as applied to claim 22 above, and further in view of Lucidarme.

Re claim 33:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *estimating interfering flows*.

Lucidarme discloses *estimating interfering flows* **(**Para.[0069] "estimation by the receiver of the signal-to-interferer ratio (SIR)"**)**.

Martin and Lucidarme are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include estimating interfering flows as taught by Lucidarme in order to choose a path that will offer the lowest interference and a better quality of service.

1. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang as applied to claim 57 above, and further in view of Jewett (US App. 2007/0233946).

Re claim 58:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *a 802.11 wireless local area network*.

Jewett discloses *a 802.11 wireless local area network* **(**Para.[0029] the network may be a wireless LAN 802.11**)**.

Martin and Jewett are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to use a 802.11 network as taught by Jewett in order to use a well-known standard for communication.

Response to Arguments

2. Applicant's arguments with respect to claims 1-44,57-59, and 62 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hefel (US 5,563,875) shows time stamps from different nodes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD S. ADHAMI whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad S Adhami/
Examiner, Art Unit 2416

/Chi H Pham/
Supervisory Patent Examiner, Art Unit 2416
6/21/09